WHAT IS CLAIMED IS:

1. A semiconductor device having a plurality of electrothermal conversion elements and a plurality of switching elements for flowing current through the electrothermal conversion elements, respectively formed on a semiconductor substrate of a first conductivity type, wherein:

each of said switching elements is an insulated gate field effect transistor comprising:

a first semiconductor region of a second conductivity type opposite to the first conductivity type, said first semiconductor region being formed on a principal surface of said semiconductor substrate;

a second semiconductor region of the first conductivity type for providing a channel region, said second semiconductor region being formed adjacent to said first semiconductor region;

a source region of the second conductivity type formed in a surface layer of said second semiconductor region;

a drain region of the second conductivity type formed in a surface layer of said first semiconductor region; and

a gate electrode formed on a gate insulating film on the channel region;

and a resistivity of said semiconductor substrate is 5 to 18 Ωcm, and said first

semiconductor region has a depth of 2.0 to 2.2 μm along a depth direction of said semiconductor substrate and an impurity concentration of 1×10^{14} to $1 \times 10^{18}/cm^3$.

2. A semiconductor device according to claim 1, wherein said second semiconductor region is formed adjacent to said semiconductor substrate.

3. A semiconductor device according to claim 1, wherein the resistivity of said semiconductor substrate is 5 to 16 Ωcm.

4. A semiconductor device according to claim 1, wherein a layout direction of said electrothermal conversion elements is parallel to a layout direction of said switching elements.

5. A semiconductor device according to claim 1, wherein said drain regions of at least two insulated gate field effect transistors are connected to each of said electrothermal conversion elements, and said source regions of said at least two insulated gate field effect transistors are connected in common.

6. A semiconductor device according to claim 1, wherein an effective channel length of the insulated

gate field effect transistor is determined by a difference of lateral impurity diffusion amounts of said second semiconductor region and said source region.

7. A semiconductor device according to claim 1, further comprising an electrode contact diffusion region of the first conductivity penetrated through said source region.

8. A semiconductor device according to claim 1, wherein a portion of said gate electrode on a drain side is formed on an insulating film thicker than the gate insulating film.

9. A semiconductor device according to claim 1, wherein a portion of said gate electrode on a drain side is formed on a field insulating film.

10. A semiconductor device according to claim 1, further comprising a liquid jet port provided for each of said electrothermal conversion elements.

11. A semiconductor device according to claim 1, wherein said electrothermal conversion elements are made of thin film resistors formed on said semiconductor substrate.

12. A liquid ejecting device comprising:

a semiconductor device recited in any one of claims 1 to 9 and 11 and provided with a liquid jet port for each of said electrothermal conversion elements;

a liquid container for housing liquid to be ejected out of each liquid jet port by said electrothermal conversion elements; and

a controller for supplying a drive control signal which drives the insulated gate field effect transistor of said semiconductor device.